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Public Access to Naloxone: Exploring Intention to Prescribe Among Tennessee Nurse Practitioners

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Table of Contents

Abstract

Background

Drug overdose deaths have become an escalating epidemic in the U.S. and surpassed motor vehicle collisions as the leading cause of accidental death. To combat opioid overdose, naloxone distribution to the public has been initiated in some states as a harm reduction strategy. Naloxone has been used for many years among hospital professionals as a life-saving antidote to reverse the respiratory depression effects of opioids, and the FDA has approved take-home naloxone devices for layperson use. Though legislation has been introduced in many states, such as Tennessee, to allow provider prescription of naloxone to laypersons, minimal data have been recorded to determine if NPs are willing to prescribe naloxone to patients.

Purpose

The purpose of this project was to explore how knowledge, attitudes, and subjective norms influence intentions to prescribe naloxone to laypersons among Tennessee nurse practitioners (NPs) following implementation of state naloxone distribution laws.

Methods

Using the Theory of Reasoned Action as the theoretical framework, NPs' knowledge, attitudes, subjective norms, and intentions to prescribe naloxone were assessed using web-based surveys. While 6,196 Tennessee NPs were emailed the survey, purposive sampling included only NPs practicing in adult primary care clinics, family practice clinics, pain management clinics, and emergency departments in the final sample. Descriptive and Pearson's Chi-Square statistics were used to analyze survey responses and correlations were established using SPSS software.

Results

Of 343 NPs included in the final sample, only 16.6% intended to prescribe naloxone to laypersons, which significantly correlated with NPs' knowledge, attitudes, and subjective norms. No significant correlation was found between geographical location and intention to prescribe. Intention to prescribe percentages increased dramatically from 16.6% to 58% when NPs were asked if they would prescribe naloxone to laypersons with prescribing protocols in place.

Discussion

This study's results confirmed the literature's suggestion that healthcare providers are relatively unaware of the evidence surrounding naloxone distribution safety and efficacy. Negative attitudes toward naloxone distribution and uncertainty over legal protection contributed to unwillingness to prescribe. Better education, training, legal clarification, and prescribing protocols should be given to NPs and other healthcare providers to increase involvement with naloxone prescription for laypersons.

Keywords: naloxone, naloxone distribution, opioid overdose, opioid overdose deaths, provider attitudes, nurse practitioner attitudes, harm reduction strategy, public health, theoretical framework, correlational statistics; Chi-Square

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Across the globe, drug overdose has become a devastating epidemic and surpassed motor vehicle collisions as the leading cause of adult accidental death in the United States (U.S.) (Centers for Disease Control and Prevention [CDC], 2015a). Of the annual U.S. death toll, pharmaceuticals contributed to approximately 22,767 overdose deaths with 71.3% related to opioid pain medications (CDC, 2015a). For many years, the life-saving opioid antidote, known as naloxone, has been used among healthcare professionals in hospitals to quickly and effectively reverse the respiratory depressive effects of opioids (Wermeling, 2015). Public health efforts and current legislation have focused on distributing naloxone to non-medically trained laypersons and training these laypersons to administer naloxone to victims in opioid overdose events. This Doctor of Nursing Practice (DNP) project explored the psychosocial factors influencing nurse practitioners' (NPs') intentions to prescribe naloxone to laypersons as an opioid overdose prevention strategy.

Background

Opioid Overdose Epidemic and Naloxone Distribution

The number of opioid overdose deaths has continued to rise each year causing a public health crisis as well as almost $72 billion in annual medical costs (U.S. Department of Health and Human Services [HHS], 2013). While intravenous (IV) heroin caused many deaths, prescription opioid pain medications, such as oxycodone, hydrocodone, and morphine, have killed more people than cocaine and heroin combined (National Institute on Drug Abuse, 2014).

This complex problem has been directly associated with inappropriate prescription of opioid medications by healthcare providers, who wrote nearly 259 million opioid prescriptions in one year (CDC, 2016). While some patients have truly required prescription opioids for chronic pain management, other individuals have solicited providers to prescribe opioids for personal illegitimate use, selling on the street, or supplying to friends and family.

To reduce the high number of opioid overdose deaths that occurred while victims waited for help to arrive, naloxone distribution was introduced as a harm reduction strategy, equipping individuals most likely to encounter opioid overdose events with the life-saving antidote (Davis, 2015). Efforts to increase public access to naloxone supplement ongoing opioid overdose prevention efforts, such as prescription drug monitoring databases, prescription drug disposal programs, substance abuse rehabilitation, and stricter opioid prescribing guidelines for healthcare providers (Kim, Irwin, & Khoshnood, 2009). Forty-three states have implemented legislation allowing provider prescription of take-home naloxone (THN) to non-medically trained laypersons, which include patients and their family members or friends (Davis, 2015). Thirty-five of these 43 states also passed Good Samaritan laws to protect laypersons and naloxone prescribers from legal repercussions when laypersons administer naloxone to opioid overdose victims in pre-hospital emergencies (Davis, 2015). Not only has public naloxone distribution become an overdose prevention strategy in the U.S., but also the World Health Organization (2014) endorsed its global significance of successfully preventing overdose deaths in countries around the world, such as England, Australia, Canada, and Scotland.

Many of the U.S. naloxone laws were introduced in response to the 2014 U.S. Food and Drug Administration (FDA, 2014) approval of Evzio™, which was the first THN auto-injector

device intended for layperson administration in pre-hospital settings. More recently in November 2015, the FDA (2015) announced its approval of a naloxone intranasal (IN) spray, which expanded public access to THN by approving an alternative delivery route. Though community-based overdose education programs (OEPs) have been providing generic THN kits and overdose response training to opioid abusers since 1996, the recent increase in state naloxone laws and growing political support for public naloxone access have dramatically expanded THN distribution to diverse settings and patient populations (Wheeler, Jones, Gilbert, & Davidson, 2015). As of 2014, THN was used to reverse approximately 26,463 opioid overdoses among individuals receiving overdose response training at community OEPs across the U.S., and research has supported that laypersons who receive appropriate training can accurately recognize signs of overdose and safely administer naloxone (Wheeler et al., 2015). Evidence suggests that improving public access to naloxone is not only effective and practical, but it is also cost-effective (Coffin & Sullivan, 2013).

Healthcare Provider Involvement with Naloxone Distribution

Despite increased legislation and political support for naloxone distribution across the U.S., poor provider involvement with naloxone distribution efforts has been recognized as a significant barrier to realizing the widespread impact of THN on opioid overdose (Beletsky et al., 2007; Burris et al., 2009; Davis, 2015; Kim et al., 2009). In a study by Beletsky et al. (2007), only 23% of surveyed physicians reported knowledge of naloxone prescription to laypersons as an overdose prevention strategy. Fifty-four percent of the same sample stated that they would not prescribe THN, which authors attributed to lack of awareness regarding naloxone laws, negative attitudes toward drug users, and malpractice liability concerns (Beletsky et al., 2007). If

healthcare providers remain unwilling to prescribe naloxone to laypersons, this harm reduction strategy's true effectiveness on decreasing overdose deaths will be impossible to realize.

Tennessee's Opioid Crisis and Naloxone Distribution Status

In 2014, 1,263 Tennesseans died of opioid overdose, a death toll that has continued to rise each year despite the Tennessee Department of Health's (TDH's, 2015b) efforts to decrease substance abuse and misuse. Because Tennessee was ranked as the highest prescribing state for opioid analgesics with 143 prescriptions written per 100 persons, it has become crucial to glean more information about Tennessee provider prescribing practices (CDC, 2016). As of March 19, 2016, 295 chronic pain management clinics were registered with TDH (2016), which alludes to the excessive number of opioids in circulation. To counteract this problem, the TDH (2014) introduced chronic pain management guidelines that describe new opioid prescribing protocols, the controlled substance monitoring database, prescription drug disposal, and naloxone distribution to laypersons.

In April 2014, Tennessee policymakers passed the Naloxone Rescue Act, which allows healthcare providers to prescribe naloxone to laypersons and protects all involved parties against civil prosecution if acting in good faith (Naloxone Rescue Act, Tenn. Code Ann. § 63-1-152 (2014)). The Addiction Treatment Act added necessary adjustments to the Good Samaritan law to allow better protection from criminal prosecution for laypersons who call emergency services after administering naloxone in an overdose event (Addiction Treatment Act of 2015, Tenn. Code Ann. § 63-1-1 *et seq.* (2015)). Since the conception of this DNP project, legislation and implementation of THN distribution in Tennessee and other U.S. states have evolved at a fast pace. On September 23, 2015, CVS Pharmacy (2015) announced that its stores in 12 states,

which includes Tennessee, will sell THN to patients without individual prescriptions. Following CVS Pharmacy's example, Walgreens Pharmacy (2016) made a February 9, 2016, announcement that its stores will also begin dispensing THN without prescriptions in 35 states and Washington, D. C. This type of THN distribution would be in line with Tennessee's Naloxone Rescue Act through its use of a standing order agreement between a physician and CVS Pharmacy (2015). Little to no data have been published to evaluate if naloxone laws have reduced the number of opioid overdose deaths in Tennessee.

Purpose of Project

More data have been needed to discover whether or not NPs are aware of naloxone laws and if they believe naloxone distribution is a good strategy for opioid overdose prevention. Though Tennessee's Naloxone Rescue Act has been in effect for almost two years, no data have been found to determine if NPs intend to prescribe THN to patients and their friends or family members. The purpose of this project is to explore the knowledge, attitudes, subjective norms and prescribing intentions among Tennessee NPs in response to the Naloxone Rescue Act. The investigator will attempt to answer the following three project questions: 1) Does lack of knowledge of naloxone distribution laws correlate with NPs' intentions to prescribe naloxone to laypersons? 2) Do underlying attitudes or subjective norms correlate with NPs' intentions to prescribe naloxone to laypersons? 3) Do correlations exist between NPs practicing in certain geographical practice locations (i.e. rural, urban, or combined) and intention to prescribe naloxone?

Theoretical Framework

To better capture the philosophical underpinnings of this project, a theoretical framework was used throughout its design. Social psychologists Ajzen and Fishbein (1980) first developed philosophies on the relationship between an individual's attitudes and his or her behavior. Their book introduced the theory of reasoned action (TRA) into a broad range of professions and explained the association between attitudes, beliefs, intentions, and behavior (Kuhns & McEwen, 2011). The TRA's goal was to better understand a variety of positive and negative behaviors and to predict individuals' choices to perform these behaviors (Glanz, Burke, & Rimer, 2015).

The following concepts were explored in the TRA conceptual model: behavioral beliefs, evaluations of behavioral outcomes, attitude toward behavior, normative beliefs, motivation to comply, subjective norm, behavioral intention and behavior (Ajzen & Fishbein, 1980). According to the TRA's definitions, behavioral belief involved the view that certain attributes are associated with behavioral performance (Evans, Ndetan, & Williams, 2009). The evaluation of behavioral outcomes could be of positive or negative value, and the attitude toward behavior referred to the individual's overall acceptability of the performed behavior (Kuhns & McEwen, 2011). Normative beliefs, also known as subjective norms, reflected the social pressure on an individual to engage or disengage in a particular behavior (Kuhns & McEwen, 2011). Similar to normative beliefs, motivation to comply involved the subjective motivation of an individual to act according to the expectation of others (Evans et al., 2009). Glanz et al. (2015) stated that behavior intention, which is the individual's perceived probability to perform the behavior, is the most significant predictor of behavior.

According to Kuhns and McEwen (2011), the TRA made the assumption that people are capable of making rational decisions based on what information they have received. Therefore, it

may also be assumed that the TRA interprets voluntary behavior rather than involuntary action. In addition, the TRA assumed that intention is the primary determinant of individuals' behaviors, and the other factors may be weighted differently from person to person (Glanz et al., 2015). Glanz et al. (2015) described how the TRA conceptual relationships create a formula for self-efficacy and a catalyst for behavior change potential.

Application of a Modified Theory of Reasoned Action

With its psychosocial roots, the TRA was a natural fit for a project examining attitudes and beliefs of NPs and their intentions to prescribe naloxone for layperson use in Tennessee. Some NPs may have underlying normative beliefs regarding opioid abusers or overdose events, which may influence their intentions to prescribe naloxone. Their innate attitudes about naloxone access to the public may also weigh their decisions to prescribe in certain practice settings. They may fear liability or legal repercussions if they prescribe naloxone. In some clinics, providers may feel a need to conform to behaviors based on other providers' support or opposition to the new laws.

Though the TRA will provide useful insight into the underlying attitudes, beliefs, and intentions of NPs, the investigator also identified knowledge as a likely influencing factor for behavior change. Because Tennessee's Naloxone Rescue Act has only recently been introduced to providers, many NPs may lack knowledge of its existence or the availability of naloxone for public use. This lack of awareness may directly correlate with their prescribing beliefs, evaluations of prescribing outcomes, and attitudes toward prescribing naloxone. Knowledge was not directly explored as a variable in the TRA, but Bandura's (1994) social cognitive learning theory linked knowledge with self-efficacy as a strong indicator that a person will feel confident

enough to perform specific tasks. Stanley and Pollard (2013) combined knowledge and self-efficacy with underlying attitudes in their study examining nurse management of pediatric pain. After considering the purpose of this scholarly project, the TRA combined with the knowledge variable of the social cognitive learning theory provided the most comprehensive approach to determining the factors influencing provider intention to prescribe. Figure 1 provides a conceptual model for the modified TRA.

Methods

Participants

In Tennessee, advanced practice registered nurses (APRNs) made up 35 of the top 50 opioid prescribers (Tennessee Nurses Association, 2014). Therefore, NPs were chosen as a representative provider sample who regularly treat and prescribe to patients at-risk for opioid overdose. A public record list of 10,910 Tennessee APRNs was obtained on March 27, 2015, via the TDH's (2015a) health professional licensing public report database. Using purposive sampling, this list was screened to remove duplicates and APRNs with no listed email address. After excluding all APRNs other than NPs, 6,196 NPs (*N*= 6,196) were solicited to be potential study participants. The following inclusion criteria were applied to NP survey responses in order to retain the final sample: must prescribe opioids to patients in practice, must practice in Tennessee, must work in primary care clinic, family practice, pain management practice, or emergency department (ED). Nurse practitioners receiving the survey were also required to have a working email and internet connection to access the survey's uniform resource locator (URL).

Materials

Data collection tool. The Take-Home Naloxone Prescriber survey (THNPS) was used to gather data for this project. The investigator used the modified TRA as a theoretical framework to develop survey questions. Though a standardized data collection tool was desired, the investigator was unable to identify one that met the needs of this study. In addition, a study by Darker and French (2009) demonstrated that study participants could not adequately comprehend overly standardized theory-based questionnaires or lengthy surveys. With this in mind, the investigator was able to use necessary flexibility with the modified TRA survey. This flexibility helped the investigator explore the pertinent constructs and cater the survey to the selected audience.

Designed for healthcare providers with a masters-level degree, the THNPS asked 15 close-ended questions to reflect to the main concepts of the modified TRA: *knowledge*, *attitudes*, *subjective norms*, and *intentions*. Underneath each of these headings, specific questions were asked that addressed the concept in relation to NP prescribing practices. All THNPS questions were quantitative in nature with one qualitative free-text section included at the end of the survey for participants to include additional comments as needed. Questions were formatted in the English language, and the following terms were defined: *prescription opioids*, *heroin, take-home naloxone*, *laypersons*, and *protocols*. Five demographic (gender, race/ethnicity), geographic (urban versus rural counties), and practice-specific (years of working experience, current employment specialty) questions were included to further screen participants and establish variable relationships. Though the THNPS has not gone through standard methods for validation, the data collection tool was externally reviewed and approved by three experts for content validity (Huck, 2012b). The THNPS was also tested among a sample group of 21 individuals to

determine internal consistency. The THNPS survey instrument is displayed in Table 1 and demographic items are located in Table 2.

Apparatus. Qualtrics web-based survey software was used to design and distribute the THNPS via email. A Microsoft Excel list of 6,196 NPs was imported into Qualtrics with first name, last name, and email address. The investigator programmed survey software to allow participation by invitation only and prevent participants from completing more than one survey. The software was also programmed to distribute emails to participants and to anonymize participants' responses, which alphanumerically coded responses and removed identifying information. Responses were programmed to be saved but not recorded until participants submitted their completed surveys. Prior to being exported for statistical analyses, responses were stored as raw data in Qualtrics' secured, on-line database. Per the software's security statement, all data collected, transferred, or stored via the Qualtrics (2015) survey were protected by high-end firewall systems. Transport Layer Security (TLS) encryption and password protection were used to store data according to Health Information Technology for Economic and Clinical Health Act (HITECH) requirements (Qualtrics, 2015). Only the investigator had access to the password and collected data. The Statistical Package for the Social Sciences (SPSS) software was used for statistical analyses.

Monetary incentive. A $150 Visa pre-paid gift card was promoted as a monetary incentive in the survey invitation email to boost response rates. Although all responses were anonymized and coded, the investigator was able to use Qualtrics software to randomly select the $150 Visa pre-paid gift card winner upon survey completion. The original NP sample was linked to the THNPS for scheduled email distribution. Using Qualtrics' programmable filters, the

investigator extracted qualified participants into a separate sample by tracking THNPS email distribution and survey completion history. Therefore, 977 NPs who completed the survey were identified without linking participants to their responses. Using Qualtrics' randomization feature, this sample was randomized 20 times prior to selecting the 57th name on the list as the winner. The number 57 was chosen using the Random Number Generator (2015) site. The winner was sent a congratulatory email through the Qualtrics website and asked to confirm his or her mailing address. The winner received the Visa gift card via U.S. Postal Service.

Design

A descriptive and correlational design was used for this project. To achieve the project's purpose, the investigator sought to explain relationships among the independent and dependent variables. Intention to prescribe was established as the dependent variable. Knowledge, attitudes, subjective norms, and geographic location were deemed independent variables.

Procedures

Data collection. Data collection took place from October 7, 2015 to November 7, 2015. Survey invitation emails with the project explanation and THNPS URL were scheduled for distribution at 0700 on October 7th. Invitation emails explicitly stated that participation was voluntary and clicking on the survey URL implied consent to the study. Reminder emails were scheduled at weekly intervals and were sent only to NPs who had not completed the survey. In order to boost response rates, emails advertised a $150 Visa pre-paid gift card to one randomly selected participant who completed the survey. On average, participants completed the survey in approximately seven minutes, and completed survey responses were automatically recorded upon submission. When participants submitted their surveys, they received a thank you email,

which further described Tennessee' Naloxone Rescue Act and provided a link to the TDH naloxone information site. Invitation and reminder emails included an option to opt out of the study, and clicking on the "unsubscribe" link removed participants from the email list and sample. The investigator's contact details were also provided in each email, so participants could ask questions or voice concerns.

Statistical analyses. Survey responses were exported as raw data from the Qualtrics database into SPSS for statistical analyses. Questions and responses were coded alphanumerically and analyzed in SPSS. Intention to prescribe was deemed the dependent variable, and all other question responses were considered independent variables. Descriptive statistics were used to determine participants' demographic characteristics, and demographic characteristics were correlated with intention to prescribe using Pearson's Chi-Square statistical tests. Chi-Square statistical tests were also used to determine correlations among participants' responses regarding knowledge, attitudes, subjective norms, with intention to prescribe THN. To avoid cell sizes too small to appropriately perform Chi-Square testing, the Likert scale responses found in Table 1 of *agree, strongly agree,* and *disagree, strongly disagree*, were combined and recoded to *agree* and *disagree* as seen in Table 3. For the same reason, responses for question 2 in Table 1 were combined and recoded to *very aware, somewhat aware,* and *not aware*. Statistical significance was established at alpha level 0.05. When Chi-Square tests generated statistically significant results (i.e. $p<0.05$), post hoc procedures were used to identify more specific correlations and better answer research questions as suggested by Huck (2012a) and Sheskin (2004). While several acceptable approaches have been used for post hoc testing of Chi-Square results, the investigator employed the standardized residual method for post hoc

testing in this study (Garcia-Perez & Nunez-Anton, 2003; Sheskin, 2004; Beasley & Schumacker, 1995; how2stats, 2014).

Ethics statement. This project was approved by the Institutional Review Board of Belmont University in Nashville, Tennessee.

Results

Sample Characteristics

Out of 6,196 NPs (*N*=6,196) solicited, 2,652 NPs opened the invitation email, and 1,149 started the survey. Of the participants who started the survey, 977 completed the entire survey, which elicited a response rate of 15.8%. After applying inclusion criteria to completed responses, 343 NPs (*n*=343) were kept as the final participant sample. Because most of the final sample were white (*n*=312 [91%]) and female (*n*=310 [90.4%]), demographic data were compared with all Tennessee APRN demographic statistics to determine if this homogeneity was proportionally similar to statewide APRN demographics. This comparison showed that overall Tennessee APRN demographics also reflect 90.2% female and 81% white characteristics, which demonstrates that the study's sample is representative of Tennessee's APRN population (Tennessee Action Coalition, n. d.). Many NPs reported between 1 to 6 years of experience (*n*=154 [44.9%]), employment in family practice site (*n*=170 [49.6%]), and practice locations in urban areas (*n*=172 [50.1%]). See Table 2 for further details on sample characteristics.

Sample characteristics and intention to prescribe. When correlating the samples' characteristics with intention to prescribe, practice site was the only variable that significantly correlated with intention to prescribe (*p*=0.000). According to post hoc tests, a strong, significant correlation was found between NPs practicing in pain management clinics and intention to

prescribe naloxone ($p<0.001$). In contrast, NPs practicing at family practice sites reported no intention to prescribe naloxone, which was statistically significant at $p<0.05$. No significant correlation was found between intention to prescribe and gender, race/ethnicity, years of experience, and urban or rural location. See Table 2 for the samples' statistical characteristics in correlation with intention to prescribe.

Intention to Prescribe Naloxone

From the sample of 343 NPs, only 16.6% (n=57) reported that they intend to prescribe naloxone to laypersons. Of particular interest, this percentage increased to 58% (n=199) when NPs were asked about their intentions to prescribe naloxone if protocols and prescribing guidelines were in place. Overall, NPs predominantly reported being unsure (n=166 [48.4%]) about whether or not they intend to prescribe naloxone. Table 3 shows more details on NPs responses regarding intention to prescribe. When instructed to select all that apply, most NPs reported comfort in prescribing naloxone to the following individuals: patients taking moderate to high doses of oral opioids for pain management (n=183), law enforcement personnel (n=167), known or suspected oral opioid addicts (n=136), and family members or friends of patients taking oral opioids for pain management (n=124). Figure 1 displays more information on to whom NPs intend to prescribe naloxone.

Knowledge and intention to prescribe. Each of the three questions measuring NP knowledge of THN and their relationships to NP intention to prescribe THN indicated strong statistical significance (p=0.000). When asked about their knowledge of THN distribution initiatives in the U.S., 46.1% (n=158) of NPs reported that they were very aware. Of the NPs who were very aware of THN distribution, most (44.3% [n=70]) were unsure if they would

prescribe naloxone. A significant correlation was seen between NPs who were not aware of THN distribution and who did not intend to prescribe THN (p<0.001). In regard to knowledge about Tennessee's THN laws, 62.1% (n=213) of NPs said they were unsure, 19% (n=65) said they were aware, and 19% (n=65) said they were unaware of these laws. Those who were aware of Tennessee's THN laws were also more likely to prescribe naloxone (p<0.001). Furthermore, NPs who were unaware of Tennessee's laws reported that they do not intend to prescribe naloxone (p<0.01). Only 5% (n=17) of the sample had previously prescribed THN in their practice, and the remaining 95% (n=326) reported no experience prescribing THN. In a strong correlation, the NPs who previously prescribed THN were significantly more likely to prescribe THN in the future (n=16 [94.1%], p<0.001). There were also significant correlations between those who had never prescribed THN and NPs who do not intend to prescribe (p<0.01) and those who were unsure if they would prescribe (p<0.001). See Table 3 for further details on how NP knowledge correlated with intention to prescribe naloxone.

Attitudes and intention to prescribe. When measuring each of the four questions correlating NP attitudes about THN and intention to prescribe THN, strong statistical significance was found (p=0.000). Forty-eight percent (n= 166) of NPs felt that THN is a good strategy for opioid prevention, but they predominantly remained unsure regarding intention to prescribe THN (p<0.01). Nurse practitioners who disagreed that THN is a good strategy were significantly opposed to prescribing THN (p<0.001). Seventy percent (n= 240) of NPs agreed that laypersons can safely and effectively administer THN in overdose events; however, these NPs mostly reported being unsure whether or not they intend to prescribe THN (p<0.001). Those who disagreed with the safety and effectiveness of layperson administration were significantly

less likely to prescribe THN (p<0.001). In regard to legal implications, most NPs (n=157 [45.8%] and n=157 [45.8%]) neither agreed nor disagreed that they felt protected by criminal or civil prosecution if they prescribed THN to laypersons. A very small portion of NPs (n=66 [19.2%] and n=54 [15.7%]) did feel protected from criminal and civil prosecution, which correlated significantly with intention to prescribe THN (p<0.001 and p<0.001). Additional statistical correlations between attitudes and intention to prescribe may be found in Table 3.

Subjective norms and intention to prescribe. Three out of the four questions covering subjective norms significantly correlated with intention to prescribe. Most NPs (n=152 [44.3%]) reported that their health provider peers were unaware of THN laws, which significantly correlated with deciding not to prescribe THN (p<0.05). When asked if their health provider peers supported THN prescription, NPs predominantly responded neither agree nor disagree (n=202 [58.95]), which directly related with being unsure of intention to prescribe (p<0.001). Even though most NPs were ambivalent, those who felt their provider peers supported THN were more likely to prescribe THN themselves (p<0.001), and those who felt their provider peers opposed THN were less likely to prescribe THN themselves (p<0.001). Regardless, NPs reported that peer pressure was not an influencing subjective norm (n=244 [71.1%]) and was not significantly related to intention to prescribe (p=0.447). Most NPs (n=184 [53.6%]) disagreed that personal reasons would influence their decision to prescribe THN, which significantly correlated with their report that they do not intend to prescribe THN to laypersons (p<0.01). Table 3 displays correlations between subjective norms and intention to prescribe in further detail.

Discussion

Geographic Location and Clinical Sites

At the beginning of this project, the investigator sought to establish if geographic location (i.e. rural, urban, combined rural/urban) impacted NPs' intentions to prescribe THN. It was important to examine geographic implications as the literature suggests opioid overdose deaths are more prevalent in rural areas (CDC, 2015b; Rosenblatt, Andrilla, Catlin, & Larson, 2015). Also, evidence has yet to conclude whether or not prescribers' attitudes and intentions to distribute THN vary depending on if they practice in rural or urban locations. According to this project's findings, significant correlations were not found between NPs who practiced in rural, urban, or combined areas and intention to prescribe. These findings suggest that geographical locations do not seem to encourage nor deter NPs' decisions to prescribe THN to laypersons. For future rural opioid prevention outreach, Tennessee advocates may consider following the Project Lazarus model, an OEP and naloxone distribution program that has dramatically decreased overdose deaths in rural North Carolina (Albert et al., 2011).

While geographical locations of NPs were insignificant to their prescribing intentions, the types of NP clinical practice sites were strongly significant. In particular, NPs practicing in pain management clinics were significantly more likely to prescribe THN to laypersons. This finding is important because NPs practicing in pain management clinics will have the greatest access to patients taking large amounts of opioid pain medication who may be at risk for overdose. Not only would these NPs have the opportunity to prescribe THN to patients along

with their opioids, but they could also contribute valuable data regarding appropriate THN candidate selection and actual THN use among oral opioid users. In contrast to pain management NPs, family practice NPs were found to be significantly less likely to prescribe THN. Providing insight into this finding, one study participant commented at the end of the survey, "I am wary of prescribing narcotic pain medications in my practice, and I would refer patients needing long-term treatment to pain management. They could then decide to prescribe naloxone." The sentiment that NPs would feel more comfortable deferring THN prescriptions to pain management specialists was echoed in the literature and throughout the final comments section by other family, adult primary care, and ED NPs (Matheson et al., 2014). In contrast, Leece, Orkin, Shahin, and Steele (2015) and Klimas, Egan, Tobin, Coleman, and Bury (2015) found that family practice providers in Canada and Ireland were not opposed to providing THN prescription and overdose education in the primary care setting, and they did not suggest that specialist involvement be required. It was interesting that only 7.5% of ED NPs in this study endorsed intention to prescribe THN, since EDs have become a successful target location for naloxone distribution efforts in other states (Dwyer et al., 2015; Samuels, 2014). The theory has been that ED providers encounter the highest risk patients (i.e. individuals brought to the ED for opioid overdose) and would be able to give them THN to prevent future overdose events (Dwyer et al., 2015). This project's findings suggested that ED naloxone distribution is not likely occurring in Tennessee.

Knowledge

Over the last decade, THN distribution has been a popular topic among U.S. policymakers, physicians, and public health professionals. With the recent increase in media

coverage of the THN movement and expansion of legal accessibility to THN, it is not surprising that many participants were aware of THN distribution across the U.S. as an opioid overdose death prevention strategy. Despite being aware of the overall THN movement, only 19% of NPs reported awareness of Tennessee's law allowing THN prescription to laypersons. Of interest, NPs with little to no knowledge of THN distribution in the U.S. or Tennessee were significantly less likely to prescribe THN to laypersons, an association also found in other research studies (Beletsky et al., 2007; Green et al., 2013). Sixteen of the seventeen NPs (94.1%) who had previous experience prescribing THN to laypersons responded "yes" when asked if they intend to prescribe THN to laypersons in the future, which demonstrates how adequate knowledge positively influences intention to prescribe. These correlational findings between knowledge and intention to prescribe make sense, as NPs are educated to prescribe medications of which they have a sufficient understanding and familiarity.

Demonstrating the disconnect between general awareness and prescriptive competency, Wilson, Spicyn, Matson, Alvanzo, and Feldman (2016) found that 80% of internal medicine residents were aware of THN use with 90% reportedly willing to prescribe THN to laypersons, yet only 15% applied the knowledge by prescribing THN to at-risk patients. Researchers and policymakers are calling for improved provider-focused education so that prescribers are aware of THN's evidence-based safety and efficacy, know how to appropriately prescribe THN, and understand the legal implications of prescribing THN to laypersons (Beletsky et al., 2007; Green et al., 2013; Kim et al., 2009; Klimas et al., 2015; Leece et al., 2015; Wilson et al., 2016).

Attitudes

Along with knowledge, this project established a significant correlation between NP attitudes toward prescribing THN and willingness to prescribe THN to patients and their families or friends. While NP responses portrayed predominantly positive attitudes toward the THN distribution movement and laypersons' capabilities to safely and successfully administer THN to overdose victims, most remained undecided on their intentions to prescribe THN. These findings suggested that positive attitudes do not necessarily predict that NPs will prescribe THN in their practices, which paralleled the findings of other studies (Leece et al., 2015; Wilson et al., 2016). This study also demonstrated that negative attitudes toward THN correlate significantly with unwillingness to prescribe THN to laypersons.

In the survey's comment section, NPs expressed concern that opioid abusers would feel false security if prescribed THN and subsequently engage in riskier opioid use. Throughout the literature, this THN *safety net* fear has contributed to negative attitudes among healthcare providers, law enforcement, paramedics, and the general public (Banta-Green, Beletsky, Schoeppe, Coffin, & Kuszler, 2013; Beletsky et al., 2007; Green et al., 2013; Kim et al., 2009; Leece et al., 2015). Despite this concern, evidence has consistently shown that laypersons do not participate in increased or riskier opioid use when given THN, and experts have explained that opioid-dependent persons typically avoid naloxone's intensely unpleasant yet harmless opioid withdrawal symptoms (Kim et al., 2009). Other NPs voiced concern over risks of adverse reactions, such as seizures, arrhythmias, pulmonary edema, and the return of respiratory depression due to naloxone's short half-life. However, a thorough literature review of naloxone's pharmacological safety and efficacy concluded that serious adverse effects were rare and often caused by comorbidities, polysubstance use, or prolonged hypoxia, rather than the naloxone

itself (Wermeling, 2015). Evidence also suggested that repeat dosing of IN and injectable THN for recurring respiratory depression in pre-hospital overdose events was rare and more often occurred during inpatient IV naloxone reversals due to IV naloxone's faster pharmacokinetics (Wermeling, 2015).

Attitudes toward medicolegal implications also significantly correlated with NPs' intentions to prescribe THN. When assessing NPs' attitudes toward the medicolegal implications of writing THN prescriptions, overall responses were negative. Only 19.2% felt they were protected from criminal prosecution, while even less (15.7%) believed they were immune from civil liability if they prescribed THN to laypersons. Though these percentages of NPs were small, findings show that NPs with full understanding and confidence in their state's naloxone legislation demonstrate more willingness to prescribe THN to laypersons. Most NPs neither agreed nor disagreed when asked if they felt legally protected to prescribe THN, which suggests that providers may be confused by, unaware of, or ambivalent toward naloxone laws. While many states, including Tennessee, have expanded legislation to ensure better provider protection, these findings add to evidence claiming that healthcare providers still feel that prescribing THN to laypersons could result in legal repercussions (Beletsky et al., 2007; Green et al., 2013; Leece et al., 2015). For example, one of the NPs practicing in a pain management clinic commented that although she felt prescribing THN was a good idea, she was afraid that writing THN prescriptions for her patients would send the message that she is prescribing inappropriate amounts of opioids. While perceptions of malpractice liability remain a barrier to providers prescribing THN, the true legal risk to providers has been low (Burris et al., 2009). Ultimately,

NPs and other providers will need clarification on medicolegal truths surrounding THN prescription.

Subjective Norms

Adding to this project's findings on knowledge and attitudes, subjective norms were significantly associated with NPs intentions to prescribe THN. Healthcare providers' reluctance to prescribe THN has often been attributed to lack of support from other providers and the medical community (Beletsky et al., 2007; Leece et al., 2015). However, this study found 71.1% of NPs indicated that peer pressure from other providers would not influence whether or not they decide to prescribe THN, and peer pressure was the only subjective norm that showed no significant correlation with prescribing intention. This finding could be because most NPs also believed that their provider peers were unaware of THN distribution, and they were uncertain of peer providers' support for THN distribution. The stigma surrounding opioid abusers and addicts has also been a widely recognized barrier to provider prescription of THN, as providers may fear professional or social criticism when writing THN prescriptions for this population (Beletsky et al., 2007; Green at al., 2013; Leece et al., 2015). By introducing accurate and evidence-based information to providers and the general public, this stigma could be reversed.

Intention to Prescribe, Prescribing Protocols and Appropriate Naloxone Recipients

A mere 16.6% of NPs in this project intended to prescribe THN to laypersons, which was a much smaller percentage than the 46% of physicians polled in a study by Beletsky et al. (2007). This discrepancy may be attributable to the fact that this project's sample had a much smaller percentage (16.3%) of NPs treating patients for pain management. Regardless, NPs'

responses revealed a dramatic positive shift to 58% when asked if they would prescribe THN with prescribing protocols in place. This finding provides quantifiable support for the consistent recommendation that prescribing protocols and standard guidelines would increase healthcare providers' prescribing practices (Green et al., 2013; Leece et al., 2015; Wermeling, 2015; Wilson et al., 2016). Protocols would ensure that providers uniformly write prescriptions in an evidence-based manner, which could reduce ambiguity and make providers feel more secure. Developed by an advocacy group of public health experts, physicians, pharmacists, and attorneys, prescribetoprevent.org provides current naloxone research, legal facts, and prescribing guidelines to healthcare providers so that they may make informed decisions when considering THN prescription (Prescribe to Prevent, 2015). Many NPs participating in this project expressed their desire for evidence, training, and prescribing guidelines to clarify confusion and enhance their confidence when prescribing THN.

For providers who intend to prescribe THN, astute identification of THN candidates should be a priority. While this priority has been thoroughly discussed throughout the literature, there has been much debate over what defines a patient as "high-risk" and whether third-party prescription is appropriate (Beletsky et al., 2007; Green et al., 2013; Leece et al., 2015). In this project, NPs selected the following as the four most appropriate candidates for THN prescription: patients prescribed moderate to high doses of opioids for pain management, law enforcement, individuals addicted to oral opioids, and family and friends of patients taking prescribed opioids. Nurse practitioners' candidate selections provided support for current efforts to dispense THN to individuals who would be the first to arrive at overdose events, such as police officers (Banta-Green et al., 2013). This project's findings showed more support for THN prescription to

oral opioid users and their associates, which is significant because research has instead focused on THN distribution to IV drug users (Wheeler et al., 2015). To help providers identify appropriate THN candidates, Prescribe to Prevent (2015) offers standardized screening tools on its website.

Limitations

While this project produced significant findings, certain limitations must be considered. The investigator created the THNPS based on theoretical underpinnings and pertinent literature findings; however, the survey has not yet been formally validated. A validated survey instrument would have added further rigor to this study's findings. In addition, the survey included a comments section in which NPs could provide additional thoughts and feelings if they so chose. It may have been useful to provide further opportunities for open-ended commentary with each quantitative question to better capture NPs' knowledge, attitudes, subjective norms, and intentions. Furthermore, only family practice, adult primary, ED, and pain management NPs were included in the final sample. In hindsight, it may have been valuable to include the responses of all NPs, especially those practicing in mental health or substance abuse specialties because they regularly encounter patients with opioid abuse disorders.

Lastly, the time period for data collection coincided with the CVS (2015) announcement that THN would be provided without individual prescription in Tennessee along with 12 other states. While this timing could not be helped, it is possible that NPs' responses were impacted by the media coverage. Ultimately, THN distribution is an evolving movement with current efforts striving for pharmacy-dispensing models and over-the-counter availability. Both aforementioned strategies would reduce the urgency for provider prescription; however, it will always be

imperative for healthcare providers to be knowledgeable about THN, provide sufficient education for patients, and direct appropriate candidates to places where they can obtain THN. Furthermore, healthcare providers will likely still be needed for THN prescriptions to combat rising costs of naloxone and uncertain insurance coverage (Thompson, 2015). Regardless, some states still have not introduced or fully adopted strategies in which individuals can acquire THN without prescription, so healthcare providers currently remain the necessary link to THN access.

Recommendations

From this project's findings, the investigator proposes specific recommendations for future research and NP practice. Nurse practitioners and other healthcare providers must be educated on the evidence surrounding THN safety and efficacy. Without knowledge of THN's effectiveness in reducing opioid overdose deaths, NPs are less likely to prescribe it to their patients. Furthermore, THN advocates should increase specific messaging to healthcare providers and promote incentives for prescribing THN to change attitudes toward THN distribution. Medicolegal truths should be explained to NPs to increase confidence in their protection from malpractice liability when prescribing THN. Better education and training should be implemented among the entire medical community to deliver a clear and factual message regarding THN distribution to candidates so that providers will feel better support for prescribing THN. Nurse practitioners should be involved with developing and implementing THN prescribing protocols, identifying appropriate candidates, facilitating community outreach efforts, and initiating new research on THN's effectiveness in practice. More data are needed to best execute THN distribution to oral opioid abusers or patients taking high doses of opioids for pain management. Therefore, NPs practicing in pain management specialties may be able to

provide this information. Ultimately, efforts should be made to incorporate THN distribution with other strategies to decrease opioid abuse, diversion, and overdose. More research is needed on THN effectiveness among individuals taking prescribed opioids for pain management.

Conclusion

While many factors contribute to NPs' lack of involvement with THN distribution, knowledge, attitudes, and subjective norms remain influencing factors for intention to prescribe. This DNP project's findings add breadth to the existing literature along with new information on NPs' perceptions and willingness to prescribe. Better education, training, legal guidance, and support should be given to NPs to increase their confidence in THN prescription and distribution. Prescribing protocols should be developed to ensure safe and efficient THN prescription by NPs. To address this growing opioid overdose epidemic in Tennessee and across the U.S., it is imperative that NPs and other healthcare providers take this opportunity to advocate for patients at risk for opioid overdose, implement preventative efforts through safer opioid prescribing practices, and prescribe THN to appropriate persons to help save lives.

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Appendix

Table 1

Take-Home Naloxone Provider Survey (THNPS) Questions and Answers

TRA Concept	THNPS Question	Answer Choices
Knowledge	1) Do you prescribe opioid pain medication in your current practice?	Yes No
	2) Which answer best describes your knowledge about the following statements? In many states, healthcare providers may legally prescribe take-home naloxone to non-medically trained laypersons. After being trained on how to recognize signs of overdose and administer naloxone, these laypersons may legally administer naloxone to opioid overdose victims in a non-hospital setting.	I have NEVER heard of this I have heard of this, but I am NOT SURE what it means I have heard of this, and I am SOMEWHAT SURE what it means I have heard of this, and I am VERY SURE what it means.
	3) Does Tennessee have a law that permits healthcare provider prescription of naloxone to laypersons for emergency use in non-hospital overdose events?	Yes No Unsure

	4) Have you ever prescribed naloxone for a layperson to administer to opioid overdose victims in non-hospital settings?	Yes No
Attitudes	5) Select the answer that best describes your feelings toward the following statement. Prescribing take-home naloxone to laypersons is a good strategy for overdose death prevention.	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree
	6) Select the answer that best describes your feelings toward the following statement. Laypersons receiving appropriate overdose response training can safely and successfully administer naloxone to overdose victims in non-hospital settings.	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree
	7) Select the answer that best describes your feelings toward the following statement. I am protected from criminal prosecution if I prescribe take-home naloxone to patients at my practice site.	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree
	8) Select the answer that best describes your feelings toward the following statement. I am protected from civil liability if I prescribe take-home naloxone to patients at my practice site.	Strongly disagree Disagree Neither agree nor disagree

		Agree Strongly agree
Subjective Norms	9) Select the answer that best describes your feelings toward the following statement. Providers in my current practice site are aware of naloxone prescription to laypersons.	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree
	10) Select the answer that best describes your feelings toward the following statement. Providers in my current practice site support naloxone prescription to laypersons.	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree
	11) Select the answer that best describes your feelings toward the following statement. Peer pressure from other prescribers at my practice site will influence my decision to prescribe or not prescribe take-home naloxone to laypersons.	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree
	12) Select the answer that best describes your feelings toward the following statement. I have personal reasons that motivate my decision to prescribe take-home naloxone to laypersons.	Strongly disagree Disagree

		Neither agree nor disagree Agree Strongly agree
Intentions	13) Do you intend to prescribe naloxone to laypersons for use in non-hospital emergency overdose events?	Yes No Unsure
	14) If your practice site had a protocol to help guide provider prescription of take-home naloxone, would you prescribe naloxone to laypersons for use in non-hospital emergency overdose events?	Yes No Unsure
	15) Select all answers that apply (You may choose multiple answers). In your current practice, which individuals would you feel comfortable prescribing naloxone to?	Patients taking low to moderate doses of opioid pain medication for pain management Patients taking moderate to high doses of opioid pain medication for pain management Known or suspected oral opioid addicts Known or suspected heroin addicts Family members or friends of patients taking opioid pain medication

	Family members or friends of IV heroin and oral opioid abusers Law enforcement personnel Any individual who requests naloxone prescription and training None Other (please specify)

Note. TRA modified to include the concept of knowledge for this study

Table 2

Demographic Characteristics of Participants

Demographic	Total *n*=343 (100%)	Intend to Prescribe Naloxone			*p*
		Yes *n*=57 (16.6%)	No *n*=120 (35.0%)	Unsure *n*=166 (48.4%)	
Gender					0.456
Male	33 (9.6)	8 (24.2)	10 (30.3)	15 (45.5)	
Female	310 (90.4)	49 (15.8)	110 (35.5)	151 (48.7)	
Race/Ethnicity					0.799
White	312 (91.0)	51 (16.3)	111 (35.6)	150 (48.1)	
Black/African American	19 (5.5)	5 (26.3)	6 (31.6)	8 (42.1)	
Hispanic/Latino	4 (1.2)	0 (0.0)	1 (25.0)	3 (75.0)	
Asian	1 (0.3)	0 (0.0)	0 (0.0)	1 (100)	
American Indian/Alaskan Native	1 (0.3)	0 (0.0)	0 (0.0)	1 (100)	
Native Hawaiian/Other Pacific Islander	1 (0.3)	0 (0.0)	1 (100)	0 (0.0)	
Two or more races	2 (0.6)	0 (0.0)	0 (0.0)	2 (100)	
Declined to answer	3 (0.9)	1 (33.3)	1 (33.3)	1 (33.3)	
NP Years of Experience					0.070
Less than 1	4 (1.2)	1 (25.0)	1 (25.0)	2 (50.0)	
1 to 2	50 (14.6)	7 (14.0)	21 (42.0)	22 (44.0)	
3 to 4	49 (14.3)	11 (22.5)	13 (26.5)	25 (51.0)	
5 to 6	55 (16.0)	7 (12.7)	25 (45.5)	23 (41.8)	
7 to 8	32 (9.3)	1 (3.1)	16 (50.0)	15 (46.9)	
9 to 10	32 (9.3)	6 (18.7)	11 (34.4)	15 (46.9)	
11 to 12	17 (5.0)	3 (17.7)	9 (52.9)	5 (29.4)	
13 to 14	21 (6.1)	4 (19.1)	6 (28.6)	11 (52.4)	

15 to 16	20 (5.8)	4 (20.0)	8 (40.0)	8 (40.0)	
17 to 18	18 (5.2)	5 (27.8)	0 (0.0)	13 (72.2)	
19 to 20	11 (3.2)	0 (0.0)	4 (36.4)	11 (63.6)	
More than 20	34 (9.9)	8 (23.5)	6 (17.7)	20 (58.8)	
Practice Site					0.000 *
Adult primary care clinic	77 (22.4)	10 (13.0)	26 (33.8)	41 (53.2)	
Family practice clinic	170 (49.6)	19 (11.2)φ	69 (40.6)†	82 (48.2)	
Pain management clinic	56 (16.3)	25 (44.6)*	10 (17.9)φ	21 (37.5)	
Emergency department	40 (11.7)	3 (7.5)	15 (37.5)	22 (55.0)	
Practice Location					0.629
Rural	81 (23.6)	11 (13.6)	26 (32.1)	44 (54.3)	
Urban	172 (50.1)	33 (19.2)	61 (35.5)	78 (45.3)	
Combined rural and urban	90 (26.2)	13 (14.4)	33 (36.7)	44 (48.9)	

Note. Rural and urban counties defined using the 2010 U.S. Census Office of Management and Budget (OMB) map of Tennessee counties.
† = $p < 0.05$; φ = $p < 0.01$; * = $p < 0.001$

Table 3

Summary of Factors Influencing Nurse Practitioners' Intentions to Prescribe Naloxone to Laypersons

Influencing Factors	Total *n*=343 (100%)	Intend to Prescribe Naloxone Yes *n*=57 (16.6%)	No *n*=120 (35.0%)	Unsure *n*=166 (48.4%)	*p*
Aware of take-home naloxone distribution in the U.S.					0.000 *
Very aware	158 (46.1)	46 (29.1)*	42 (26.6)φ	70 (44.3)	
Somewhat aware	73 (21.3)	7 (9.6)	24 (32.9)	42 (57.5)	
Not aware	112 (32.6)	4 (3.6)*	54 (48.2)*	54 (48.2)	
Knowledge of Tennessee's naloxone distribution law					0.000 *
Yes	65 (19.0)	25 (38.5)*	12 (18.5)φ	28 (43.1)	

No	65 (19.0)	8 (12.3)	33 (50.8)φ	24 (36.9)†	
Unsure	213 (62.1)	24 (11.3)*	75 (35.2)	114 (53.5)†	
Previously prescribed take-home naloxone to laypersons					0.000*
Yes	17 (5.0)	16 (94.1)*	0 (0.0)φ	1 (5.9)*	
No	326 (95.0)	41 (12.6)*	120 (36.8)φ	165 (50.6)*	
Prescribing take-home naloxone is a good overdose prevention strategy					0.000*
Agree	166 (48.4)	50 (30.1)*	21 (12.7)*	95 (57.2)φ	
Neither agree nor disagree	102 (29.7)	4 (3.9)*	39 (38.2)	59 (57.8)†	
Disagree	75 (21.9)	3 (4.0)*	60 (80.0)*	12 (16.0)*	
Laypersons can safely and successfully administer naloxone to overdose victims					0.000*
Agree	240 (70.0)	54 (22.5)*	51 (21.3)*	135 (56.3)*	
Neither agree nor disagree	62 (18.1)	2 (3.2)φ	36 (58.1)*	24 (38.7)	
Disagree	41 (12.0)	1 (2.4)φ	33 (80.5)*	7 (17.1)*	
Feel protected from criminal prosecution if prescribing take-home naloxone					0.000*
Agree	66 (19.2)	29 (43.9)*	13 (19.7)φ	24 (36.4)†	
Neither agree nor disagree	157 (45.8)	17 (10.8)φ	50 (31.8)	90 (57.3)φ	
Disagree	120 (35.0)	11 (9.2)φ	57 (47.5)*	52 (43.3)	
Feel protected from civil liability if prescribing take-home naloxone					0.000*
Agree	54 (15.7)	24 (44.4)*	9 (16.7)φ	21 (38.9)	
Neither agree nor disagree	157 (45.8)	22 (14.0)	46 (29.3)†	89 (56.7)φ	
Disagree	132 (38.5)	11 (8.3)φ	65 (49.2)*	56 (42.4)	
Health provider peers are aware of take-home naloxone distribution					0.000*

Agree	89 (25.9)	28 (31.5)*	27 (30.3)	34 (38.2)†	
Neither agree nor disagree	101 (29.4)	14 (13.9)	30 (29.7)	57 (56.4)	
Disagree	152 (44.3)	14 (9.2)φ	63 (41.4)†	75 (49.3)	
Health provider peers support take-home naloxone distribution					0.000 *
Agree	49 (14.3)	31 (63.3)*	3 (6.1)*	15 (30.6)φ	
Neither agree nor disagree	202 (58.9)	21 (10.4)*	59 (29.2)φ	122 (60.4)*	
Disagree	91 (26.5)	4 (4.4)*	58 (63.7)*	29 (31.9)*	
Peer pressure will influence decision to prescribe or not prescribe take-home naloxone					0.447
Agree	43 (12.5)	8 (18.6)	12 (27.9)	23 (53.5)	
Neither agree nor disagree	56 (16.3)	11 (19.6)	15 (26.8)	30 (53.6)	
Disagree	244 (71.1)	38 (15.6)	93 (38.1)	113 (46.3)	
Have personal reasons that influence decision to prescribe or not prescribe take-home naloxone					0.015 †
Agree	76 (22.2)	15 (19.7)	33 (43.4)	28 (36.8)†	
Neither agree nor disagree	83 (24.2)	7 (8.4)†	35 (42.2)	41 (49.4)	
Disagree	184 (53.6)	35 (19.0)	52 (28.3)φ	97 (52.7)	
Would prescribe take-home naloxone if prescribing protocol existed					0.000 *
Yes	199 (58.0)	57 (28.6)*	27 (13.6)*	115 (57.8)*	
No	49 (14.3)	0 (0.0)*	48 (98.0)*	1 (2.0)*	
Unsure	95 (27.7)	0 (0.0)*	45 (47.4)φ	50 (52.6)	

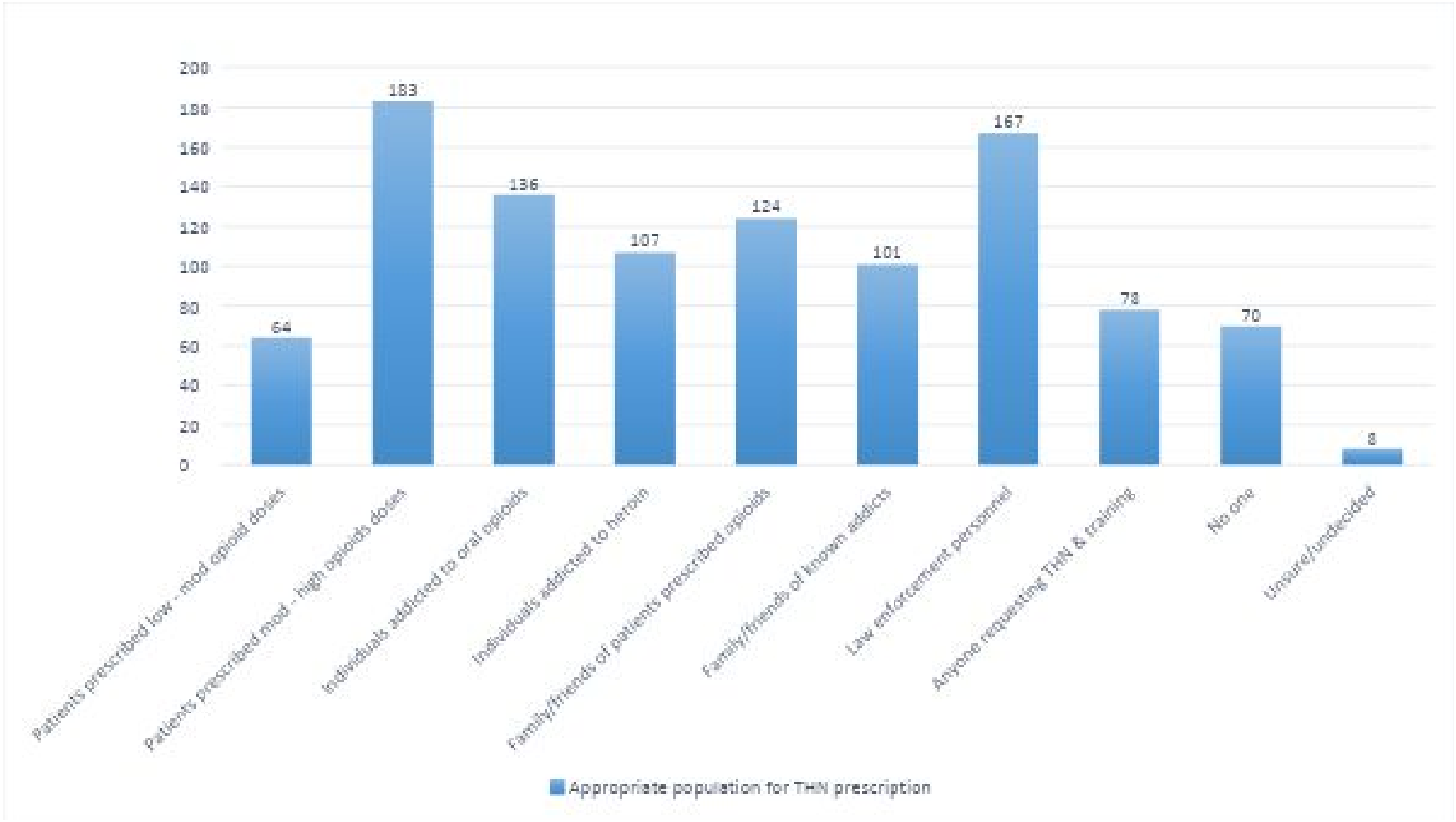
Note. † = $p < 0.05$; φ = $p < 0.01$; * = $p < 0.001$

Figure 1

Modified Theory of Reasoned Action Conceptual Model

Figure 2

Summary of Individuals to whom NPs Felt Comfortable Prescribing Take-Home Naloxone


200
180
160
140
120
100
80
60
40
20
0
64
183
136
107
124
101
167
78
70
8
Patients prescribed low - mod opioid doses
Patients prescribed mod - high opioids doses
Individuals addicted to oral opioids
Individuals addicted to heroin
Family/friends of patients prescribed opioids
Family/friends of known addicts
Law enforcement personnel
Anyone requesting THN & training
No one
Unsure/undecided
Appropriate population for THN prescription